WHAT IS CLAIMED IS:

1. A resonator comprising:

a columnar dielectric; and

a shielding conductor surrounding the dielectric, the resonator using a resonant mode causing generation of a current crossing a corner of the columnar dielectric,

wherein the shielding conductor is formed in direct contact with the surface of the dielectric.

2. The resonator of Claim 1, wherein the dielectric includes a center portion and an outer portion covering at least part of the center portion, and the dielectric constant of the center portion is higher than the dielectric constant of the outer portion.

3. The resonator of Claim 1, wherein the columnar dielectric is in a shape of a cylinder or a square pole.

4. The resonator of Claim 1, wherein the shielding conductor is a metallized layer formed on the surface of the dielectric.

5. The resonator of Claim 1, wherein the resonant mode is a TM mode.

6. A resonator comprising:

a dielectric; and

a case for housing the dielectric,

wherein part of the case is constructed of conductive foil and the conductive foil partly shields the dielectric

electromagnetically.

7. The resonator of Claim 6, wherein the case includes a first portion and a second portion, the conductive foil is interposed between the first portion and the second portion, and the dielectric is electromagnetically shielded by the first portion and the conductive foil.

8. The resonator of Claim 6, wherein the case includes a first portion and a second portion, the conductive foil is interposed between the dielectric and the second portion of the case, and the dielectric is sandwiched between the first portion and the second portion of the case.

9. The resonator of Claim 7, further comprising an elastic layer interposed between the conductive foil and the second portion.

10. The resonator of Claim 6, wherein the resonant mode of the resonator includes a TM mode.

11. A resonator comprising:

a dielectric having a hole;

a case surrounding the dielectric; and

a conductor rod inserted into the hole of the dielectric, the insertion depth of the conductor rod being variable,

wherein a resonant frequency is adjusted with the insertion depth of the conductor rod into the hole.

12. A radio frequency filter comprising:

a dielectric;

a conductor member for electromagnetically shielding the dielectric;

a conductor probe extending from a portion of the conductor member through a space defined by the conductor member to reach another portion of the conductor member, for coupling the dielectric with an external input signal or an external output signal.

13. A radio frequency filter having a columnar resonator using a resonant mode causing generation of a current crossing a corner, the resonator comprising:

a dielectric; and

a shielding conductor surrounding the dielectric formed in direct contact with the surface of the dielectric.

14. A radio frequency filter having a resonator, the resonator comprising:

a dielectric; and

a case for housing the dielectric,

wherein part of the case is constructed of conductive foil and the conductive foil partly shields the dielectric electromagnetically.

15. A radio frequency filter having a resonator, the resonator comprising:

a dielectric having a hole;

a case surrounding the dielectric; and

a conductor rod inserted into the hole of the dielectric, the insertion depth of the conductor rod being variable,

wherein a resonant frequency is adjusted with the insertion depth of the conductor rod into the hole.

16. A radio frequency filter having a plurality of resonators at least including an input-stage resonator having a dielectric and receiving a radio frequency signal from an external device and an output-stage resonator having a dielectric and outputting a radio frequency signal to an external device, the radio frequency filter comprising:

a case surrounding the plurality of resonators for electromagnetically shielding the respective resonators;

a partition formed between resonators of which electromagnetic fields are coupled with each other among the plurality of resonators;

an inter-stage coupling window formed at the partition; and

an inter-stage coupling degree adjusting member made of a conductor rod for adjusting the area of the inter-stage coupling window.